FACE INVESTIGATION

SUBJECT: Electrician Apprentice Dies Following a 55-foot Fall From a Roof

SUMMARY:

A 21-year-old male electrician apprentice (the victim) died of injuries received after falling 55 feet from a roof. The victim was working with a journeyman electrician to install conduit and wiring for a surveillance camera on the flat roof of a hospital. An eighteen-inch high ledge surrounds the roof edge, and a wire rope guard railing was located 20 feet from each roof edge. The victim was standing outside the guard railing and was using a reel pulling tape to pull de-energized electrical wire through a conduit. There were no witnesses to the incident, and it appears he inadvertently stepped to the edge of the roof and fell 55 feet to the ground. The electrician was replacing the cover on a pull box about 40 feet away from where the victim had been standing and looked for him in that location. He noticed that the electrical wires were over the edge of the building, went to the edge to look over, and saw the victim lying near the base of the building. The victim was moved to the hospital emergency room, where he was pronounced dead of massive head trauma. The Wisconsin FACE investigator concluded that, to prevent similar occurrences, employers should:

- **evaluate their current safety program and incorporate specific training procedures emphasizing the importance of recognizing and avoiding hazards in the workplace. These procedures should include, but not be limited to, conducting hazard evaluations before initiating work at a job site and implementing appropriate controls**

- **ensure that fall protection equipment is provided and used by workers where the potential for a fall from an elevation exists**

- **conduct scheduled and unscheduled site visits to evaluate field compliance with company safety rules and procedures**

INTRODUCTION

On November 16, 1993, a 21-year-old male electrician apprentice (the victim) died after falling 55 feet from a roof. The Wisconsin FACE investigator was notified by the Wisconsin Department of Industry, Labor and Human Relations, Workers Compensation Division, on November 24, 1993. On December 15, 1993, the WI FACE field investigator initiated an investigation of the incident with an interview of the owner of the company. The investigator obtained copies of the coroner's report, death certificate, police report and photographs, OSHA citations, and viewed a videotape of the incident site that was recorded several hours after the incident. The investigator conducted a visit to the site of the incident on April 18, 1994, and interviewed the company safety director and a security officer of the building where the incident occurred who was on duty at the time of the incident.

The employer in this incident was an electrical contractor that had been in operation for 75 years and employed about 325 workers, of which approximately 57 were electrician apprentices. The employer had a safety director who implemented a formal safety program which included providing training films at new employee orientation and during continued employment, and making monthly site visits with the foremen of major jobsites to discuss safety aspects of these jobs and to conduct periodic safety inspections. In addition, the foremen were directed to conduct weekly toolbox safety talks at each jobsite. There were no written job-specific safety procedures, or records of safety training and discussions.

The safety director met new employees to provide a general description of company safety policies, before they were assigned to jobsites. Apprentice electricians were selected from a union pool after completion of a formal training program, and received on-the-job training, direction and supervision from senior journeyman electricians. The teams of apprentice and journeyman electricians were assigned to work together until a project was completed, and then might be assigned separately to different projects. Apprentices usually worked at the company for about six months, and then returned to the union pool for reassignment as an apprentice. The victim had worked for the company for four months prior to the incident. This was the first fatality the company had experienced.

INVESTIGATION

The victim was working with a journeyman electrician (the co-worker) to install conduit and wiring for a surveillance camera on the flat roof of a five-story hospital. Work on the project had been in progress for 3 days before the incident, however the day of the incident was the first day that the victim had worked on the roof. The victim and the co-worker had been working together for approximately one week.

On the day of the incident, the victim and co-worker arrived at the site and started work on the roof at approximately 7:30 a.m. There were no other workers on the roof on the morning of the incident. The weather conditions were overcast with no precipitation or wind. The flat roof had a tar and pea gravel surface and was dry at the time of the incident. An eighteen-inch high, 3 1/2 inch-wide ledge surrounds the roof edge, and a wire rope guard railing was located 20 feet from each perimeter edge. The two wire-rope guardrails are approximately 42" and 21" high, and are strung through concrete support poles. Personal protective equipment, including safety harnesses and lifelines, were available for company employees in a construction trailer located on the hospital grounds, but were not being used by the victim or his co-worker.

The workers had spent the morning installing conduit and electrical wires to be connected to a camera at the northeast corner of the roof. The victim was using a "fish tape reel", a hand-held device used by electricians to pull electrical wires through conduit. The line of the reel was attached to three de-energized electrical wires that were pulled through the conduit as the reel was turned. The conduit was attached to the bases of the concrete guardrail support poles and then bent around a corner outside of the guardrail and extended to the ledge wall on the east side of the building, about 20 feet from the northeast corner where the camera was located. The electrical

wires emerged from the conduit at the point where the conduit met the ledge wall. At approximately 10:45 a.m., the co-worker saw the victim outside of the guardrail area, holding the reel and facing south. The co-worker was kneeling about 40 feet away, and looked away for about 30 seconds to replace the cover on the conduit junction box. When the co-worker looked back, the victim was gone and the wires were over the north edge of the roof. The co-worker went to the edge to look over, and saw the victim lying face down near the base of the building with two people standing nearby. The co-worker went inside to call for help, then went to the victim's location. The victim was moved to the hospital emergency room, where he was pronounced dead of massive head trauma.

CAUSE OF DEATH

The medical examiner reported the cause of death as head trauma.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should evaluate their current safety program and incorporate specific training procedures emphasizing the importance of recognizing and avoiding hazards in the workplace. These procedures should include, but not be limited to, conducting hazard evaluations before initiating work at a job site, and implementing appropriate controls.

Discussion: Safety programs should be evaluated and training procedures incorporated which emphasize the importance of recognizing and avoiding hazards in the workplace, following established safe work procedures, and wearing appropriate personal protective equipment. In this incident, the hazard of working near the unguarded roof edge without fall protection equipment was apparently not recognized by the workers. Since the incident, the company has expanded the written safety program to include specific fall protection information and maintaining records of all training activities.

Recommendation #2: Employers should ensure that fall protection equipment is provided and used by workers where the potential for a fall from an elevation exists.

Discussion: Fall protection equipment should be immediately available for workers when there is a possibility that their work tasks will involve exposure to an unprotected roof edge. In this incident, the work tasks involved installing conduit along the 18-inch high roof ledge. Fall protection equipment was available in a construction trailer located near the incident site, but was not being used by the workers on the roof.

Recommendation #3: Employers should conduct scheduled and unscheduled site visits to evaluate field compliance with company safety rules and procedures.

Discussion: Employers should conduct scheduled and unscheduled safety inspections of work sites to help ensure that employees are performing their assigned tasks according to established company safety rules and

procedures. The company in this incident had one safety officer who directed the safety program for 325 employees at multiple worksites, and visited the major sites once or twice a month. He was not always able to visit smaller contract sites (as in this incident). To be effective, a safety program must be enforced at each worksite by the supervisor and any unsafe conditions should be corrected immediately. Such inspections also demonstrate that the employer is committed to the company safety program and to the prevention of occupational injury.